Nuclear Division News

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 7 No. 19/September 16, 1976

inside . . .

Mobile home owners, what's your energy IQ? A new ORNL study on mobile home heating and cooling has produced recommendations on energy-saving measures. For some tips, see page five.

Also in this issue is the conclusion of Ruth Young's article on hiking, page six.

Other features in this issue:

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- New waste treatment plant at ORNL . . . . . page 3
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Pilot plant to demonstrate 'ANFLOW'

A pilot plant demonstration of a new energy-conserving process for treatment of liquid wastes, developed by researchers at Oak Ridge National Laboratory, will be conducted by the Energy Research and Development Administration, the city of Oak Ridge, and the Chemical Process Products Division of the Norton Company, Akron, Ohio.

The joint demonstration project involves construction and operation of a 5,000 gallon-a-day facility that will utilize a biological fermentation process to convert portions of municipal sewage into a fuel gas containing methane, while performing secondary waste water treatment on the remainder.

In operation by year's end

The energy-conserving potential of the process relates not only to the production of a useful fuel gas, methane, from municipal sewage or industrial wastes, but also to the expected significant reduction in fuel consumed by the process itself. These savings result from being able to treat wastes at lower temperatures and because the process does not require the operation of air pumps or blowers used in conventional waste treatment systems.

The pilot plant unit, scheduled for operation by the end of 1976, will be contained in a column five feet in diameter and approximately 20 feet tall. It will be operated at the East End Sewage Treatment Plant in Oak Ridge. Although the facility will process only a portion of the plant's 1.5 million gallon daily capacity, it represents a significant point in scale-up for commercial application.

LOOK TOWARD PILOT PLANT—William Griffith (left) and Alicia Compere, ORNL researchers and principal developers of the ANFLOW process, join with Tom Fortner, superintendent of the city of Oak Ridge's Services Department, in studying the original flow sheet for the city's East End Sewage Plant to determine the site of the future ANFLOW pilot plant. ANFLOW is a technique for biologically treating liquid wastes, producing useable products such as methane gas.

ERDA has authorized support totaling $125,000 for fiscal year 1976 to cover the Laboratory's participation in the demonstration project. Participating with ORNL researchers will be: the Norton Company, a multinational manufacturer of commercial waste treatment systems, which will contribute the basic processing unit and design for the pilot plant with an estimated value of $140,000; and the city of Oak Ridge, which will contribute site preparation and other services.

Fermentation process

The biological conversion process on which the demonstration project is based is called ANFLOW (for *an*aerobic, up*flow,* packed-bed bioreactor). It is designed to produce fuel gas or chemical products through a biological fermentation process in which liquid wastes are taken up by microorganisms and broken down into smaller molecules, producing a cleaner waste stream. Anaerobic refers to the fact that oxygen is not required for operation of the process.

Researchers William Griffith and Alicia Compere, of ORNL's Chemical Technology Division, developed the ANFLOW process, and have operated several bench-scale experiments, both in a laboratory setting and at the sewage plant in Oak Ridge.

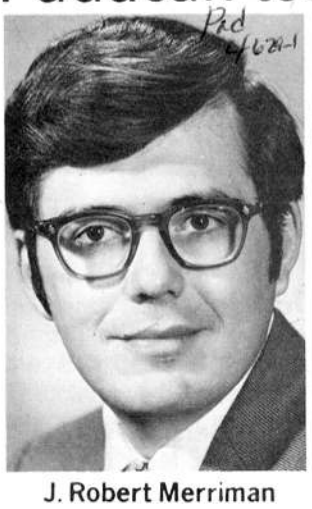
In the ANFLOW pilot plant, liquid waste materials will be introduced into the bottom of an upflow biological reactor. This unit contains a bed of treated packing material that allows microorganisms to grow in an oxygen-free environment. By increasing the population of microorganisms as well as their contact with liquid waste, an ANFLOW unit is able to process waste organic matter efficiently.

Four main objectives

Key objectives of the pilot plant project will be to: 1) reduce significantly the amount of energy required for operating conventional waste treatment systems; 2) produce fuels, such as methane, thus reducing requirements for petroleum-derived products; 3) reduce the capital investment needed to construct similar waste facilities; and 4) meet En-

(Please turn to page eight)

Paducah tells major appointments



J. Robert Merriman

William C. Taylor

H. Dale Bewley

The appointment of J. Robert Merriman as Manager of Engineering and Technical Services for the Paducah Gaseous Diffusion Plant has been announced by Clyde C. Hopkins, Plant Manager.

In addition, two other major appointments were announced: William C. Taylor has been named Superintendent of the Plant Engineering Division, succeeding Merriman; and H. Dale Bewley has been appointed Superintendent of the Laboratory Division, replacing Robert W. Levin who recently was named Director of the Technical Services Division at the Oak Ridge Gaseous Diffusion Plant.

(Please turn to page eight)

RUSSELL RECEIVES HONOR—William L. Russell, principal geneticist in the Biology Division, ORNL, recently was presented with a certificate designating him a Senior Research Fellow of Union Carbide Corporation. He is the first Nuclear Division staff member to receive such an honor. Russell also received a "special" award, as shown in the photograph. From left are Roger F. Hibbs, President of the Nuclear Division, Russell, and Herman Postma, Director of ORNL.

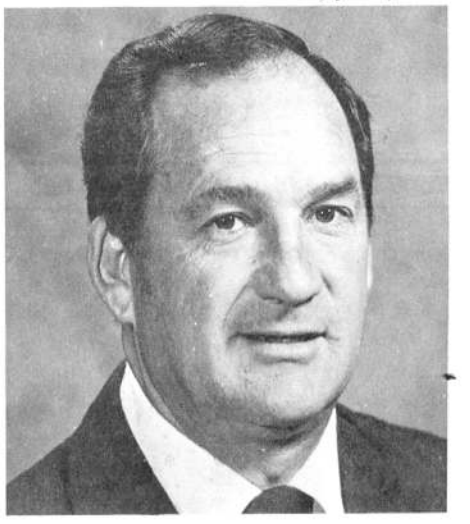
Maddux named new coordinator for Oak Ridge plants' recreation

William A. Maddux has been named Recreation Coordinator for the three Oak Ridge plants, replacing E. W. Whitfield Jr., who has assumed other duties in Y-12's Employee Relations Division.

Born in Putnam County, Maddux has been with Union Carbide for 17 years, after serving with the U.S. Air Force in Korea and working with the city of Oak Ridge Recreation Department.

He has a B.S. degree from East Tennessee State University.

Mrs. Maddux is the former Savanna Clinton and the couple has two daughters, Linda and Sandra, and a son, Michael. Their home is at 115 Antioch Drive, Oak Ridge.



William A. Maddux

Kolski named planner-estimator

Frank Kolski

Frank Kolski has been promoted to planner-estimator in the Building and Utility Services Department, Plant and Equipment Division at Oak Ridge National Laboratory.

A native of Irvington, N. J., Kolski joined the Nuclear Division last year as a utility mechanic in Plant and Equipment. He previously was self-employed as a masonry contractor. He has taken course work at Tennessee Technological University in Cookeville, working toward a B.S. in management.

Kolski and his wife, Patricia, have two sons, Frank and Ed. The family resides at Route 2, Kingston.

'Save Energy Seminar' set

To help area homeowners make their homes more energy-efficient, the City of Oak Ridge will sponsor a "Save Energy Seminar" on September 30 from 7:30 to 9:30 p.m. at the Oak Ridge Civic Center, Rooms A and B.

Features of the seminar will include the following presentations:

•Allen Holman, ORNL Engineering Technology Division, will demonstrate an easy method of adding insulation to the hot water heater and offer tips on improving the performance of natural gas furnaces.

•Edward J. Spitzer, Director of the Tennessee Energy Office, will describe the Home Energy Savers Program to be launched by the TEO, under a grant from the Federal Energy Administration, this fall.

•The Tennessee Valley Authority will participate with advice on do-it-yourself insulating projects. Jack Edwards, TVA representative, will give instruction on methods described in TVA's booklet, "The Handyman's Guide to Home Insulation."

•Operation of the heat pump and its energy-saving benefits will be shown by TVA representatives through use of a demonstration panel.

In addition to the scheduled program, educational and commercial exhibits and demonstrations will be open to the public from 6:30 until 10 p.m. at the Civic Center. Local dealers and contractors of insulating materials, storm windows and heat pumps will participate.

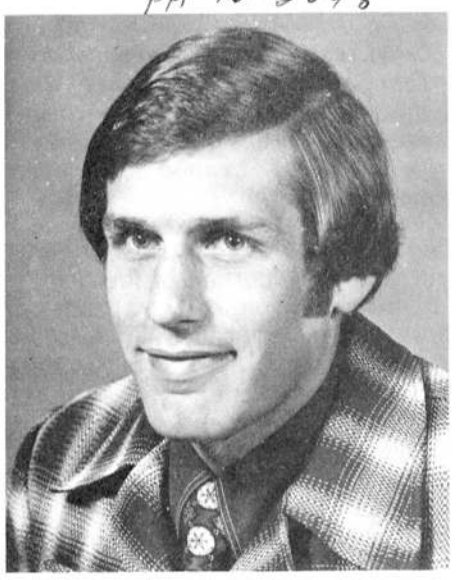
Oak Ridge National Laboratory, the Tennessee Valley Authority, the Anderson County Community Action Council's "Operation Winterize," the Tennessee Energy Office and the Oak Ridge Utility District will provide exhibits and handout literature.

Coordinator of the Save Energy Seminar is Ruth C. Johnson, home economist employed by the City of Oak Ridge.

next issue . . .

The next issue will be dated September 30. The deadline is September 22.

Ray certified as accountant



Gregory A. Ray

Another Nuclear Division accounting analyst, George A. Ray, has earned his Certified Public Accountant status.

Ray, a native of Bradford, Pa., has been with the General Accounting Division for two years. He has a B.A. degree from Albion (Mich.) College and an M.B.A. degree from the University of Tennessee in finance and accounting.

Prior to joining Union Carbide he worked with the Joe E. Henry Co., Knoxville. He is active in the Boy Scouts and the Sertoma Club, and is on the board of directors of HOPE, Inc.

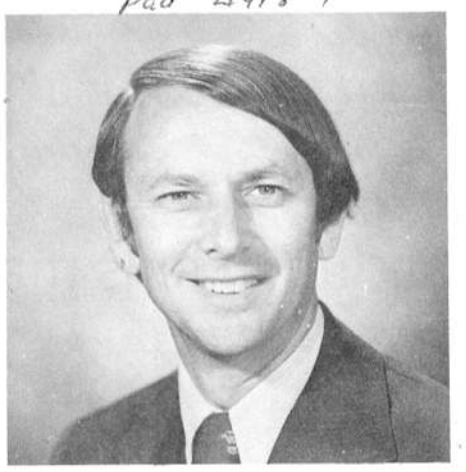
Ray lives at Route 17, Joe Daniel Road, Knoxville.

New head of PGDP Employment

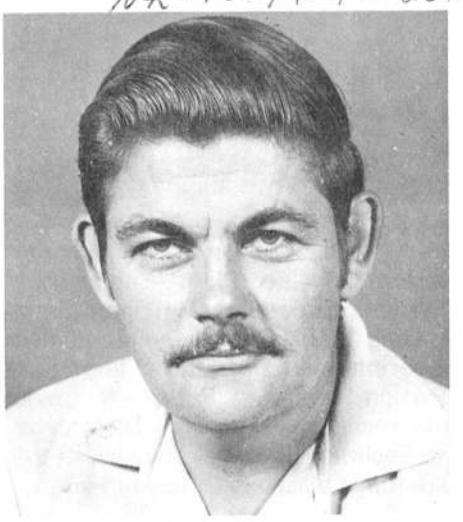
William J. Ellington has joined the staff of the Paducah Gaseous Diffusion Plant as head of the Employment Department.

A native of Graves County, Ky., Ellington was previously employed by Ingersoll-Rand Corporation, Mayfield, Ky. He has taken course work at Paducah Community College, Northeast College (Mississippi) and Michigan State University.

Ellington is a member of the Paducah Area Industrial Relations Association and the Four Rivers Manufacturing Council. He and his wife, Geneva Ann, live at Route 3, Paducah, with their four children, Sheila, Shane, Shannon and Sheldon.



William J. Ellington



Thomas J. Albert

Albert named to supervisor post

Thomas J. Albert, ORGDP's Fabrication and Maintenance Division, has been promoted to a maintenance supervisor. Prior to transferring to ORGDP more than four years ago, Albert was employed at Oak Ridge National Laboratory as an electrician. He has also worked as a construction electrician.

A native of Insull, Ky., he was raised in Caryville, Tenn. His wife is the former Wilma Foust of Lake City, and the couple has a son, Dwayne. Their home is at 103 Cahill Lane, Oak Ridge.

New plant treats low-level wastes

A new $1.3 million facility for treatment of liquid wastes containing low levels of chemical or radioactive contamination has been placed in operation at Oak Ridge National Laboratory.

The Process Waste Treatment Plant, capable of reducing contamination levels in liquid effluents more than 300 times, represents a 30- to 60-fold improvement in cleaning efficiency over the system previously in use.

The plant, now in full-scale operation after tests begun this spring, receives a variety of process wastes: low-level liquid wastes from such sources as laboratory sinks, steam system condensates, process cooling water and rainwater runoff from potentially contaminated areas.

These effluents, after treatment in the plant and reduction of any contamination to safe levels, are discharged into White Oak Lake on the Oak Ridge reservation, from where they ultimately return to the Clinch River below Melton Hill Dam.

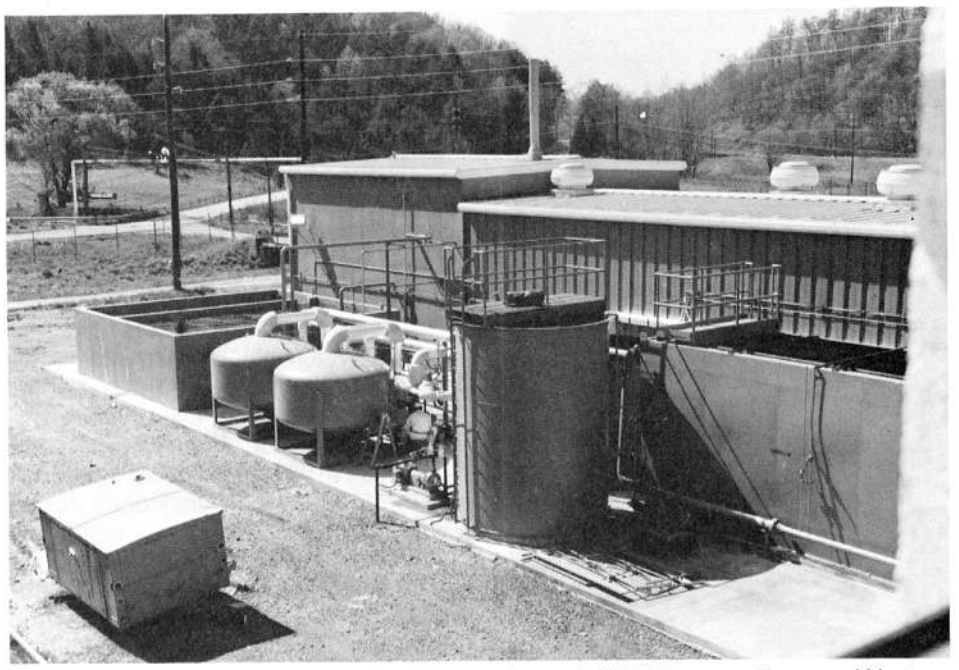
ORNL Process

Previous discharges from White Oak Lake to the Clinch River have represented less than one percent of the maximum permissible concentration of radioactive materials in drinking water established by federal radiation protection standards. Approximately half of this came from the process waste. The new plant is expected to essentially eliminate contamination from this source.

The plant is based on an ORNL-developed process called "scavenging precipitation-ion exchange," developed by scientists in the Chemical Technology Division and tested in a pilot plant in the mid-1960's. Several years later, when ORNL officials began looking for ways to improve the Laboratory's waste management systems and the existing treatment plant was in need of repairs, the decision was made to put the new process into actual operation. Design for the plant was carried out by the Nuclear Division's General Engineering staff.

The process consists of three basic operations: precipitation, equivalent to a "softening" process; filtration; and ion exchange to remove the remaining contamination.

The chemical and physical action during the precipitation step scavenges radionuclides, dirt particles and algae from the waste stream and retains them at the bottom of the vessel in a slurry, which at this point contains approximately 50 percent of the radioactivity present in normal process waste. The slurry is periodically pumped to a lined disposal basin in one of the Laboratory's solid waste disposal areas.



TREATING LIQUID WASTES—A rear view of ORNL's new Process Waste Treatment Plant shows the precipitator-clarifier equipment, right, and the anthracite filters. Three ion exchange columns, the third part of the operation, are housed along with a chemical makeup area in the building at the rear. The plant, designed for the treatment of liquid wastes containing low levels of chemical or radioactive contamination, represents a 30- to 60-fold improvement in cleaning efficiency over the Laboratory system previously in use.

Ion exchange completes cleaning

The effluent from the precipitator-clarifier is pumped through a bed of anthracite filters to remove any finely divided suspended matter and then through one or more ion exchange columns (depending on the rate of processing). These columns, cylindrical shells three feet in diameter and more than twelve feet high, each contain a specially developed resin which is nearly 100 percent effective in removing the remaining radionuclide contamination from the waste stream.

After ion exchange, the waste stream, now completely stripped of radioactivity and other contaminants, flows into an adjacent clearwell where it is adjusted to the same acidity level as normal river water before discharge into White Oak Creek. The plant is capable of continuously treating waste streams at flow rates up to 200 gallons per minute.

Lab Division now Technical Services

The name of the Laboratory Division at the Oak Ridge Gaseous Diffusion Plant has been changed to the K-25 Technical Services Division.

In announcing the change, J. C. White, Technical Services manager for Nuclear Division production facilities, noted that it has been made "to be more descriptive of the current and planned activities of the Division."

Robert W. Levin is director of the Division. Reporting to Levin will be a newly-created Material Quality Evaluation Department, as well as the Chemical Analysis, Isotopic Analysis and Technical Information Departments.

The Uranium Exploration Project, formerly a part of Laboratory Division, now reports directly to White.

Golf leagues

Stafford-Madewell have come to the top in the South Hills Golf League, trailed by Sherrod-Shelton and Pappas-Waldrop.

In the Dead Horse Lake League it's a tie between Zang-Amerine and Chitwood-Troutman for first place. Huber-Mustaleski hold the next highest slot.

New Toastmasters Club planned

The formation of a new Toastmasters Club in the Oak Ridge-Knoxville area is being planned for the Bearden (West Knoxville) area. The club will be open to both men and women and will meet on a different night from the other area Toastmasters Clubs.

The new club will be the fourth in the area. Toastmasters Clubs are already established in Oak Ridge, Knoxville and Fountain City.

Toastmasters International is a non-profit educational organization formed to help its members improve their communication skills. The three existing clubs comprise employees from ORNL, Y-12, ORGDP, TVA, ERDA, Aluminum Company of America and the business sector of Oak Ridge and Knoxville.

Nuclear Division employees living in the West Knoxville area who are interested in the new club should contact Al Walls at 3-6730, or in Knoxville at 693-1485. For information on the existing area clubs, contacts are: Fountain City - Grover Cain, ext. 3-6606 (meets every Thursday night at the S&W Cafeteria, Knoxville); Oak Ridge - David Lindsay, ext. 3-9526 (meets every Monday night at the Alexander Motor Inn); and West Knoxville - Joe Hafford, ext. 3-3542 (meets every Thursday night at the TraveLodge, Papermill Road).

Buck hit near ORGDP entrance

J. E. Cheek, Metals Preparation Division at Y-12, was driving past the Oak Ridge Gaseous Diffusion Plant at about 11 p.m., Tuesday, August 31. Just as he approached the main entrance to the Plant (Portal 2), a deer darted out in front of his truck. Because it was dark, Cheek didn't see the deer until it was "about half a yard in front of me — right on me, in other words," he said.

Although Cheek escaped unharmed, the deer was killed and an undetermined amount of damage was done to his pickup truck.

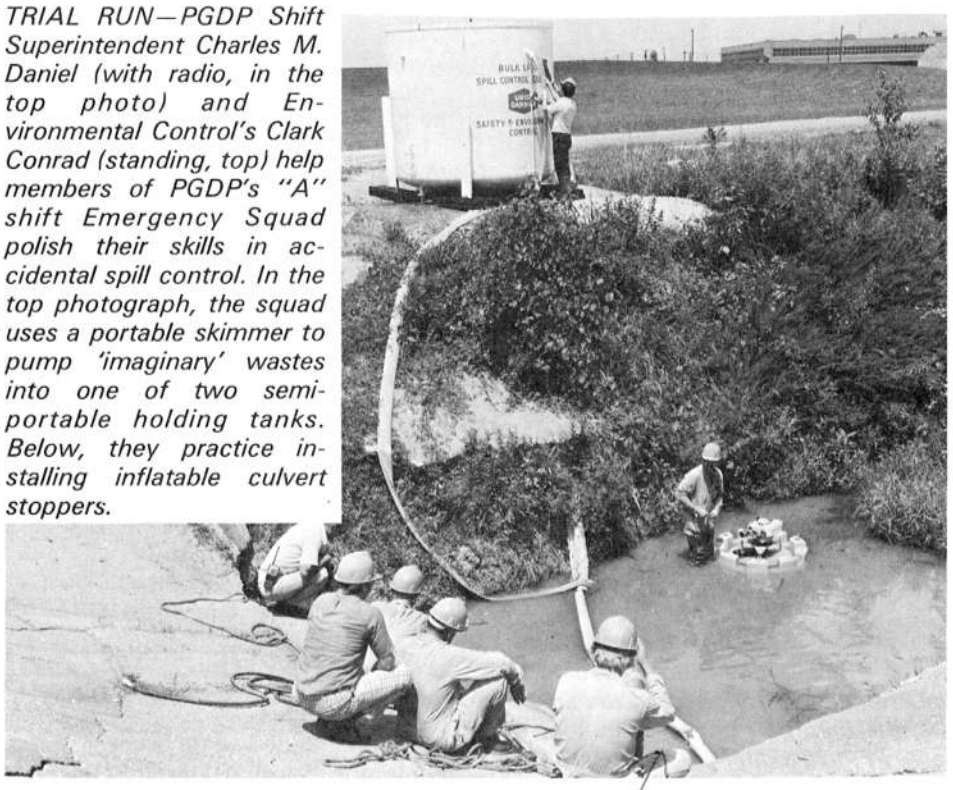
The buck killed by Cheek weighed 225 pounds, according to Jay Story, ORNL Environmental Sciences Division, who was called to the scene to investigate the kill. This accident brought the number of deer killed on the Oak Ridge reservation this year to 12.

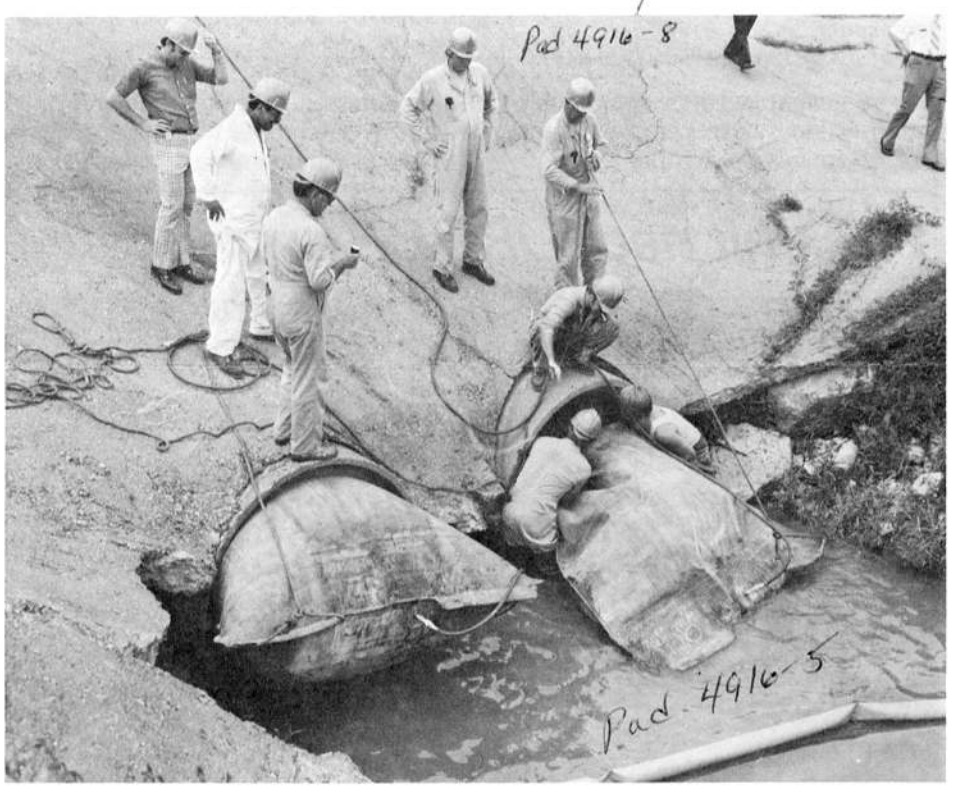
Story said that this time of year (with East Tennessee fog obscuring vision) is especially dangerous for motorists who drive through the reservation. Drivers should be especially careful early in the morning and late in the evening, because the deer are usually more active during those hours. Several does have been sighted traveling with fawn, indicating a steady increase in the population of deer.

Several signs have been posted warning of "deer crossing," but drivers must realize that these are not the only places where deer may leap onto the highway. Please drive with the reservation deer in mind — this could happen to you!"

Accidental spill control measures ready at PGDP

TRIAL RUN—PGDP Shift Superintendent Charles M. Daniel (with radio, in the top photo) and Environmental Control's Clark Conrad (standing, top) help members of PGDP's "A" shift Emergency Squad polish their skills in accidental spill control. In the top photograph, the squad uses a portable skimmer to pump 'imaginary' wastes into one of two semi-portable holding tanks. Below, they practice installing inflatable culvert stoppers.





Equipment and special procedures for dealing with possible oil or chemical spills have been added at the Paducah Gaseous Diffusion Plant.

PGDP's Environmental Control Department has equipped a special trailer with tools and apparatus to contain and remove accidental spills of oily waste or hazardous chemical effluents from Plant drainage ditches emptying into Big Bayou and Little Bayou Creeks, which eventually empty into the Ohio River. The Emergency Squad on each rotating shift has been trained to use the equipment, following procedures developed by Environmental Control.

Tanks at strategic locations

The trailer, designed to comply with Environmental Protection Agency requirements, contains a gasoline-powered portable skimmer, containment booms, inflatable culvert stoppers, bottles of compressed nitrogen, absorbent material, various small tools and protective equipment. In conjunction with the trailer, semi-portable holding tanks are located at two strategic drainage locations on the Plant's drainage systems.

The equipment can be used at several other designated containment locations if needed, although these are considered less important strategically than the centers where the tanks are located.

'Reporting most important'

"Should an accidental spill occur and escape into the drainage system, the Emergency Squad would take the trailer to the containment center involved," said Clark Conrad, Environmental Control. "Depending on the type of spill, they would then place the oil containment boom or install the inflatable culvert stoppers, use absorbent materials to soak up the oily waste, or use the portable floating skimmer to pump the waste into the holding tank."

The contents of the tank could then be batch treated or taken to one of two new oil disposal plots for biodegradation of oily wastes.

"The most important element of this spill control plan is prompt reporting of a spill to the shift superintendent. If spills are reported immediately, ample time exists for the Emergency Squad to respond and control them," Conrad said.

division deaths

Mr. Hester

Kenneth Simpson Hester, an operator trainee at the Paducah Gaseous Diffusion Plant, died at his home August 21. He had been with the Nuclear Division since August, 1975.

Mr. Hester is survived by his wife, Paula Jean Hester, and a son, Patrick Benjamin Hester.

DeVaughn Pittman, a science technologist in Instrumentation and Controls Division, Oak Ridge National Laboratory, died August 21 in Veterans' Hospital, Atlanta, Ga. A native of Turbeville, S.C., he had been with the Nuclear Division since 1959.

Mr. Pittman

Survivors include a sister, Mrs. Lea McDonald; and two brothers, I.W. and Don R. Pittman.

Funeral services and burial were in National Cemetery, Florence, S.C. The family requests that any memorials be in the form of gifts to the American Cancer Society, in care of Mrs. Mary Aubuchon, 408 Greenwood Drive, Clinton.

anniversaries

ORGDP

30 YEARS

William H. Suffridge, Operations Analysis; James A. Young, Data Center; Billie L. Lee, Administrative Services; Harry D. Robbins, Production Barrier Development; Ernest H. Ramsey Jr., Machine Shop Department; and Junior A. Womac, Project Maintenance Department.

25 YEARS

Earl H. Shaw, James A. Matson, Kenneth S. Evans, Walter D. Hedge, John W. Sumpter and Virginia H Bullock.

20 YEARS

Joe P. Reavis Jr.

ORNL

30 YEARS

Alfred C. Butler, Health Physics Division; Harry R. Bronstein, Chemistry Division; Robert K. Francis, Engineering; John H. Gillette, Laboratory Protection Division; Gorman S. Hill Jr., Environmental Sciences Division; Oliver C. Yonts, Thermonuclear Division; and Elizabeth B. Johnson, Engineering.

25 YEARS

John P. Judish, Georgia C. Westmoreland, Wayne L. Maddox, Bernard Lieberman, Billie S. Dunlap, Charles C. Foust, Cleveland T. Johnson, John M. Chandler and Clayton O. McNew Jr.

20 YEARS

Jack Keeney, Hassell Cherry, Minton J. Kelly, Jerreld J. Smith, Virgil B. Isham, Hurtle N. Drinnen, Robert G. Ross and Robert D. Slover.

PADUCAH

25 YEARS

Lewis A. Allmon Jr., Curtis E. Yarbrough, Howard E. Armstrong, Alenda H. Wolfe and G. Keith Bryant.

Y-12 PLANT

30 YEARS

William L. Sharp, Chemical Services; William J. Mackley, Standards and Surveys Department; Donald Zucker, Chemical Services; and Jerry A. George, Employee Relations.

25 YEARS

Earl L. Price, Floyd R. Mack, Kenneth E. McCulley, Mary M. Park, Wilneth S. Milligan, Clyde J. Price, William S. McBee Jr., Veneta T. Lawson and Katherine M. Griffith.

Ulyses Hatmaker, Herman W. Jinks, Eldridge Payne, Mattie R. Marlar, Clarence D. Wells and Arthur R. Melton.

20 YEARS

Arthur L. Hall and Clarice D. Cagle.

GENERAL STAFF

25 YEARS

C. Eddie Hair.

20 YEARS

Joe C. Jennings, Martha J. Hovater and Ruth H. Beeler.

safety scoreboard

Time worked without a los-time accident through August 26:

Paducah	163 Days	1,860,000 Man-Hours
ORGDP	28 Days	860,616 Man-Hours
Y-12 Plant	187 Days	5,467,000 Man-Hours
ORNL	304 Days	6,101,327 Man-Hours

question box

If you have questions on company policy, write the Editor, Nuclear Division News *(or telephone your question in, either to the editor, or to your plant contact). Space limitations may require some editing, but pertinent subject matter will not be omitted. Your name will not be used, and you will be given a personal answer if you so desire.*

Salary program film

QUESTION: There was an article in a recent issue of **Union Carbide World** about a movie UCC has made to explain its salary program. Why hasn't it been shown in the Nuclear Division?

ANSWER: It will be shown. The film is a basic one designed to assist UCC Divisions in their salary communications program. The movie was available early this year. Here in the Nuclear Division, we had held salary communication meetings with most salaried employees in late 1974 and early 1975, and did not feel that additional meetings this year would have been timely. Another round of meetings is planned for early 1977 and the UCC movie will be used in those meetings.

Are raises being held up?

QUESTION: It is my impression that some exempt raises are being held up. If this is so, what are the determining factors in selecting those being deferred?

ANSWER: Exempt-salaried increases are normally programmed at the beginning of the year based on the employee's performance, as perceived at that time by management, and the employee's position in his/her rate range. The salary plan established at that time is reviewed periodically during the year, and a supervisor may revise the action planned for an employee based on a more current review of an individual's performance. Except for individual cases of this kind, there is no "hold up" of salary increases.

Questions concerning salary increases are best directed to the immediate supervisor.

Pay in lieu of vacation

QUESTION: If an employee retires on December 31, 1976, is he/she entitled to pay in lieu of vacation for 1977?

ANSWER: Yes, if the employee is actively at work on the last normally scheduled workday in the month of December.

Company store hours

QUESTION: The Y-12 Company Store sometimes opens much later than the time posted on the door sign. If store officials realize that there is going to be a delay in opening the store on time, could there not be an advance announcement made on the plant public address system to inform employees?

ANSWER: The Company Store normally opens within two or three minutes before or after the posted time. Your question probably refers to the month-end inventory which has, on occasion in the past, taken longer than anticipated. In the future, these closings will be on the last and the first two working days of each month. The large sign at the store will advise employees of these closings.

The Plant PA system is primarily an emergency communication media, though sometimes used for other messages deemed to be of special overall importance. We do not think it should be used for announcements concerning the Company Store.

Selling UCC stock

QUESTION: Recently I sold my UCC stock within the Savings Plan system. The only statement from the New York office was how many shares were sold, the investment and the amount obtained from the sale. Data missing were the selling date, the price per share and the brokerage fee. If the stock was sold the day the order was placed (or later) the fee was excessive. If some sort of price averaging system was used, then the system was not disclosed. The plan is not pure Company benefit — 70 percent of the money is my own investment. A fee is charged for the transaction and the accounting should be as good as any other stock transaction. Why isn't it?

ANSWER: At the present time, stock sales are telephoned to the New York Savings Plan office on the date the selling form is signed and handed to the installation Benefit Plans representative. If the order gets to New York before 11:30 a.m., it is sold on that date. Later orders are processed on the next business day.

After the sale a copy of the selling order is returned to the employee showing the total shares sold and the net proceeds realized from the sale. The proceeds are invested in accordance with the employee's instructions after the first of the following month, and another copy of the selling order is sent to the employee showing the effect of the investment.

Usually, the actual brokerage fee should be lower than the cost of selling an individual lot through a broker, because larger volumes of sales have a lower sales cost per share. Also, if the company is buying any shares for other employees on the the same date, the shares to be bought are matched against the shares to be sold and only the minimal transfer taxes required by New York State are added in connection with the transaction.

The cost per share for selling the stock is determined by adding all of the sales cost and dividing by the total shares sold. In this manner, each employee shares the proportionate cost of all sales transacted on that date.

It is difficult to determine whether or not your transaction was reasonable without seeing your information. If you will take it to your Benefit Plans Office, they will be glad to check it out for you.

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STUDIES MOBILE HOME DATA—John V. Wilson of ORNL's Engineering Technology Division examines data from an instrumented mobile home experiment set up by ORNL at the Y-12 Plant.

Study aids mobile home owners

A study at Oak Ridge National Laboratory on mobile home heating and cooling has developed recommendations on energy saving measures which can be taken by manufacturers in the fabrication of new mobile homes and by present mobile home occupants.

A report on the study, prepared by John V. Wilson, Engineering Technology Division, cited air leakage by way of the heating and cooling ducts, joints, the building envelope and windows as the principal sources of summer heat gain and winter heat loss. The report recommended that mobile home manufacturers provide storm windows for mobile homes in northern climates where energy costs are high, and that more care be exercised in construction of ventilation ducts and the building envelope to avoid leaks.

The report also recommended that new mobile homes be constructed with insulation thicknesses of 3½ inches in walls, 6 inches overhead and 4 inches under the floor, compared to the 1974 standard of 2 inches in walls, 3½ inches overhead and 2 inches under the floor. For a 12' x 60' mobile home this would mean an estimated increase in construction costs of about $134, but the investment by the home buyer would pay for itself within four to six years through energy cost savings.

For mobile homes heated by propane, additional savings could be achieved by installing a furnace with a capacity corresponding to the design heating load rather than being oversized, as many such furnaces presently are, according to the report.

For existing mobile homes, Wilson suggested that the owners can help lower energy use by sealing leaks in ventilation ducts, adding storm windows in cold climates, lowering thermostat settings from 68 to 55 upon retiring at night in winter and cooling the home by opening windows rather than running air conditioners, when weather conditions permit. Additional savings can be made by using window shading to exclude sunlight in summer but to admit it in winter.

The study was conducted as part of the Laboratory's Residential Energy Conservation Program and was sponsored by the Energy Research and Developmment Administration, the Federal Energy Administration and the National Science Foundation.

Wilson obtained the estimates from a computer program that utilized historic weather data to calculate the necessary energy requirements for a mobile home. The program was verified by comparing its predictions with measurements made on an instrumented home at ORNL. The program was then used to calculate the costs and benefits of these improvements in six representative American cities—Atlanta, Dallas, Kansas City, Minneapolis, Philadelphia and Seattle.

John C. Moyers, director of the mobile home study, said that such housing is becoming an increasingly important factor in the nation's residential energy use. He said statistics show that mobile homes account for 91 percent of all new housing marketed in 1973 under $20,000 and 68 percent of housing under $30,000. He estimated that there will be approximately 5.3 million mobile homes in use by 1980 and 9 million by 1990.

"As utility costs for heating and cooling increase, it is important to explore for opportunities to provide more energy-efficient structures for mobile home buyers," he said. "Mobile homes are produced in factories and should be more susceptible to quality control, unified system design and engineering motivation than custom-built homes."

Participating in the study with Wilson and Moyers were Sydney J. Ball and Fred A. Heddleson.

patents granted

To Henry Inouye and Chain T. Liu, both of ORNL, for "Modified Iridium Tungsten Alloy."

A DIFFERENT DRUMMER

Hiking presents both challenge and pleasure for enthusiast Young

The beginning of Ruth Young's discussion of hiking in the last issue delved into cross-country treks, backpacking and the particular pleasures of spring and summer hiking. In the conclusion to follow she takes armchair strollers through fall and winter on the trail, discusses possible hiking sites, and presents her personal reasons for loving this outdoor activity.

PART 2
by Ruth K. Young

The coming of fall brings spectacular colors. To stand atop a ridge and look around at all the color is to experience a thrill not to be known by the motorist in his car.

Surely winter is no time to hike? Not so. Winter brings its own colors, sounds, and snow, beautiful snow. Even mild winters mean frosts, frozen waterfalls, and trees and plants outlined in white. In fact, for many hikers, winter is the most comfortable time to hike! Those steep uphill climbs are less arduous without the humidity of summertime. A deep snow will mean a prodigious effort for the trailbreaker since making the first tracks in snow requires considerable physical exertion. Going uphill, as usual, we soon begin to perspire even though the air may be cold and crisp, our breath visible; then we begin to peel off layers of clothing to cool off! A truly delightful experience is to hike cross-country through a gentle sprinkle of snowflakes.

"The whole scene is one of tranquility and serenity."

Late afternoon is one of my favorite times. In summer, the birds are beginning to find their roosts and their musical sounds dwindle; the sun slants through the trees, no longer burning but offering illuminating rays, and the whole scene is one of tranquility and serenity. In winter, the sun makes snow and frost glisten like a field of sparkling jewels, a breathtaking sight. We very often finish our hikes in silence, in order to enjoy to the fullest these last moments in the woods, to savor each forest scent and sound -- all to be treasured until the next time we can encounter them.

It can be argued, I think, that the word "hike" is sometimes a misnomer. In Webster's Collegiate Dictionary, one definition of the word reads, "a long walk, especially for pleasure or exercise." "A long walk" does not apply when we crawl on hands and knees through rhododendron on a cross-country route to Greenbrier Pinnacle, or jump from rock to rock up the middle of Boulevard Prong, or pull ourselves up by over-hanging roots and cling to narrow rock ledges as we push through the rock crevices of the Catstairs.

Do we find pleasure in all this? Yes, indeed. We have been offered a challenge and we have successfully met that challenge. Looking out from the knifedge-like top of Little Duckhawk Ridge (see photo), we see the surrounding mountains from a perspective not possible anywhere else.

Not all of our outings are arduous, cross-country struggles. Sometimes we do nothing more strenuous than stroll out to Andrews Bald from Clingmans Dome. The strenuous trip is not for everybody, and the easy hike has its own rewards. For along those less steep trails, the flowers also bloom, the berries are ripe, and the birds are just as busy there as in the deep woods.

There are those who enjoy hiking alone. They enjoy the wilderness sounds and the opportunity to meditate on a chosen subject without the distraction of human companions. For others, however, the companionship and shared experiences are a must.

"There are practical advantages to group hiking."

There are practical advantages to group hiking -- the safety factor, for instance. A minimum of three hikers is advisable. Should a mishap occur to one of them, one hiker can remain with the injured person while the third person can go for help. Groups can venture farther afield, going into areas in the deep backcountry where the lone hiker, perhaps unsure of himself with map and compass, may hesitate to go. Even so, groups should be kept small in numbers to minimize the environmental impact.

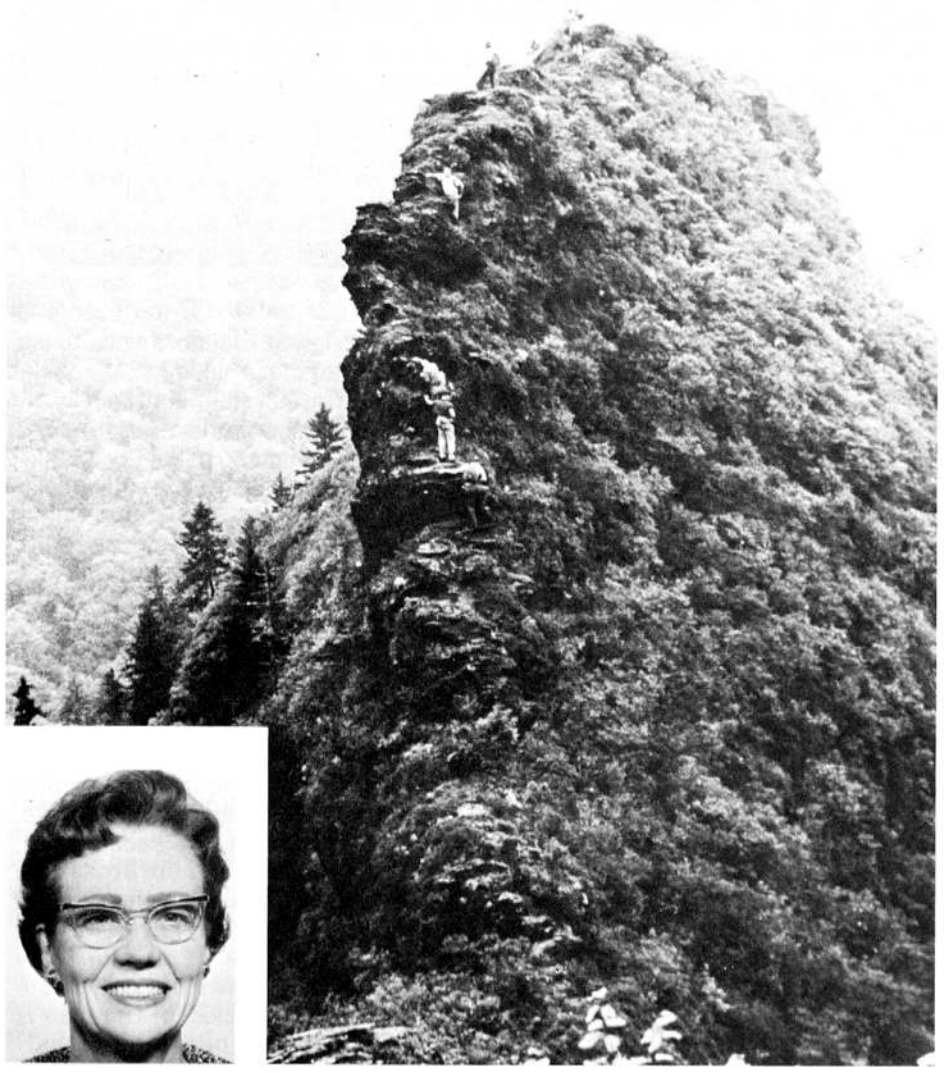
This, then, is a thumbnail sketch of hiking in the Smokies. There are other places to hike, of course. The nearby Cumberland Mountains offer excellent opportunities and for some people are favored above the Smokies. An Oak Ridger can hike in his own backyard, so to speak: the unique and beautiful North Ridge Trail in the heart of Oak Ridge provides all the requirements for a fine hike. One can travel greater distances to enjoy the North Cascades in the northwest, the Sierras in California, the Rockies, or go east to the Adirondacks in New York.

Perhaps the best-known hike in the eastern U.S. in the 2000-mile-long Appalachian Trail, which attracts incredible numbers of "through" hikers -- those starting at one end of the A.T. (usually Springer Mountain in Georgia) and walking the entire length to the northern terminus of Mt. Katahdin in Maine. One may go farther afield -- to the Austrian or Swiss Alps, the Italian Dolomites. There exist few boundaries for the hiker.

"Not only a physical refreshment; it is, for me, also a spiritual one."

Ten hikers will give you ten different reasons for hiking, but all will share a love of the out-of-doors. They enjoy being out of reach of automobile horns, telephones, Muzak, industrial fumes. They welcome becoming part of nature for a while; drinking cold, pure water from mountain streams; breathing fresh air in deep, deep drafts; listening to birds singing high in the treetops. One of the greatest pleasures is that of finding and photographing the unusual in wildflowers and waterfalls encountered along the way.

Why do I hike? In no other activity do I experience a sense of fulfillment, of rapport with life and nature that comes with being out-of-doors, of exerting physical effort to reach a destination, and of mental relaxation that makes me sensitive to sight and sound. Hiking is not only a physical refreshment; it is, for me, also a spiritual one.



PRECIPITOUS CLIMB—Part of the fun of hiking in the Great Smoky Mountains National Park is the rugged terrain, such as Little Duckhawk Ridge. Ruth Young, Oak Ridge Gaseous Diffusion Plant, has been active in the Smoky Mountain Hiking Club and uses this photograph as evidence of the exciting places in the mountains to hike.

ORGDP bowling

Team 6 holds the first place spot in the D Shift Mixed League, trailed closely by Team 3. C. Nelson took men's high game with 265 and J. Ward men's high series with a 568. For the women it was J. McIntyre, high game with 186; A. Springs, high series with 505.

ORNL bowling

In the ORNL C League, it's the Pin Heads on top, followed by the Utensils and the Alley Rads. Taking individual honors were Nicklow, high series with handicap, 671; DeRieux, high game with handicap, 255; and Brooks, high hame scratch, 212. Honors for team high series with handicap went to the Pin Heads for their 2914.

Bowlers wanted

As bowling season gets underway, the following leagues have issued a call for bowlers:

- The Y-12 Mixed League needs both men and women bowlers. Their season began September 13 (Wednesday evenings, 5:45, Tri County Lanes), but it's not too late to sign up. Contact Recreation, 3-5833.
- The ORNL Ladies' Bowling League needs individual and substitute bowlers. They bowl Tuesday evenings, 5:45, Ark Lanes. Contact Laura Walker, 3-5445, or Recreation.
- The Y-12 Mixed Bowling League needs individual and substitute bowlers. The Y-12'ers bowl Wednesday evenings, 5:45, Tri County Lanes. Contact Jeri Kobisk, 3-3058, or Recreation.
- The K-25 D Shift Mixed Bowling League needs individual and substitute bowlers. They bowl on Tuesday evenings, 7:30, Tri County Lanes. Contact Jackie McIntyre, 3-3731, or Recreation.

Correction on bowling time

On the bowling schedule printed in the last issue, the ORNL Ladies' League was listed as bowling on Tuesday evenings. This should have been **Wednesday** evenings, 5:45, Ark Lanes. They still have openings, so let them hear from you!

medicine chest

by T. A. Lincoln, M.D.

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning health in general. Questions are handled in strict confidence, as they are handled in our Question Box. Just address your question to "Medicine Chest," NUCLEAR DIVISION NEWS, Building 9704-2, Stop 20, Y-12, or call the news editor in your plant, and give him or her your question on the telephone.)

QUESTION: "What will be the availability of influenza vaccine in the Nuclear Division this fall now that the government is going to provide it?"

ANSWER: Free flu vaccine will be available at work, providing adequate supplies are received. In the past, the influenza vaccine has always been offered free to all Nuclear Division employees who desired it, but those who were at high risk received the greatest encouragement to participate.

This year the people with chronic heart, respiratory and kidney disease as well as diabetes will be advised to take a special bivalent vaccine. *(Editor's note: A monovalent vaccine is one consisting of one viral strain; bivalent, two viral strains; and polyvalent, multiple strains.)* Those with only normal risk will be given the swine influenza vaccine alone.

Production delayed

The Nuclear Division will receive vaccine supplies from the Tennessee Department of Public Health. Although in the past only about 25 to 50 percent of the employees have participated in any of our vaccination programs, it is expected that many more will this time because of the publicity regarding a possible serious epidemic.

Unfortunately, production and distribution of the vaccine have been delayed. There will not be enough to immunize every adult before the usual influenza season is well underway. Many people may not be able to get their immunization until December or later.

Because industries with established occupational medical programs can deliver the vaccine quickly at no cost to the government, they will probably be given reasonably adequate amounts as soon as it is available. For example, by quickly immunizing most of the employees at the Nuclear Division and TVA, an appreciable segment of several counties will be protected, thus slowing any epidemic, should it develop.

Clip and save

Since there may be confusion about the various vaccines which will be available, the explanation below should be cut out and put on your bulletin board so when community plans are announced you can keep them straight.

Influenza A (New Jersey), monovalent, is the vaccine designed to protect only against swine influenza. When available, it will be offered to all persons interested, although the recommendations for children are still being formulated. Because of delays, immunization of children in public clinics may not even be attempted. In adults over age 18, one injection should be sufficient.

Influenza A (New Jersey) and Influenza A (Victoria), bivalent, will be reserved only for those at increased risk because of chronic disease, as outlined above. A single injection should be sufficient for adults over age 18.

Influenza B (Hong Kong/72), monovalent, may also be given as a separate single injection and is recommended only for those at high risk. It will not be available free from the government, but the Nuclear Division Health Centers have a sufficient supply of last year's polyvalent vaccine (which contained the old influenza A strains and the Hong Kong/72 influenza B strain) to immunize these people. In most locations, the B vaccine is available now or will be available soon. It is recommended that it be given a few days or a week before either the new mono- or bivalent A vaccines. People at high risk should get their booster now.

Side effects

Infrequent mild side reactions to any of the flu vaccines may occur. Low-grade fever, aching, weakness or fatigue should not bother more than one to two percent of those who received an injection. Serious reactions are exceedingly rare and are usually allergic in nature.

Anyone allergic to eggs should not receive any of the vaccines. An allergist can perform special tests to decide whether it is safe for someone in doubt to participate. Women who are pregnant can receive the vaccine, since there are no data to indicate that it could be hazardous to the fetus. In general, however, women who are less than three months pregnant may be wise to wait or skip the vaccine this time. Anyone with a cold or any infection, especially if it is causing some fever, should delay getting their immunization until they have recovered.

May start in late fall

When will we be ready to start? Probably not before late October or November 1, and possibly later. Each Health Center has its own plans for administering the vaccine in what they believe to be the most efficient way for their plant. Many of the immunizations will be given in the Health Centers and some will probably be given at special times in different locations in the plants.

In Tennessee, some Nuclear Division employees will probably be able to get their vaccine at work before other members of their families will get it from community clinics. Since the vaccine is in short supply, some people may have to wait. At this time, we do not know exactly how much we will get, but we hope it will be adequate.

Although the threat of a dangerous world-wide epidemic of swine influenza A is difficult to predict, there have been enough warning signs to cause public health authorities to recommend a general public immunization program. If no epidemic occurs, the program may be labeled "political." If an epidemic occurs and its devastation in the USA is severely limited, it will be hailed as a "miracle" of preventive medicine. *C'est la vie!*

Sixth Bicentennial Lecturer, Daddario to speak Tuesday

Emilio Daddario, director of Congress' Office of Technology Assessment, will deliver the fifth in a series of six Oak Ridge Bicentennial Lectures Tuesday evening, September 21. His topic will be "The Technologist in the Political Arena."

The lecture, sponsored by Oak Ridge National Laboratory, will be held at 8 p.m. at the American Museum of Atomic Energy. The public is invited.

SOMETHING FOR EVERYONE as the barbecue-hootenanny for Oak Ridge Gaseous Diffusion Plant employees returns to the Clark Center Recreation Park. Shown above are scenes from last year's event. The hootenanny will be held this year on Saturday, October 9. Tickets are available throughout ORGDP and retirees may obtain tickets from the Recreation Department, extension 3-5833.

ORGDP Barbecue-Hootenanny set

Saturday, October 9, is the day set aside for the annual Barbecue-Hootenanny for ORGDPers this year. The place again will be the Clark Center Recreation Park.

As usual, the star of the annual event will be the barbecue, which simmers all night and is prepared by shiftworkers at ORGDP. In addition, there will be a band for dancing, softball games, special games for the children, and the ever-popular sing-along.

Tickets, which are $2.50 for adults and $1 for children, are available through the division representatives in the Plant. Retirees and their families are especially invited and may obtain tickets through the Recreation Office, extension 3-5833. Tickets will also be available at the gate on October 9.

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PGDP plans United Appeal drive

In preparation for the Paducah Gaseous Diffusion Plant's 1976 United Appeal campaign, set for the week of September 27, campaign chairman Daniel H. Stitt distributed information to this year's solicitors, pictured above, at a recent meeting. From left are Lawrence S. Franklin, Sue E. Adams, Stitt, W. Scottie Ray, Robert W. Murray, Claude "Ace" Summers and Bobby A. Abell.

Employees may contribute by a fixed percentage payroll deduction, a fixed quantity payroll deduction or by cash donation. This year's contributions will be distributed to 61 agencies within six counties in Western Kentucky, Southern Illinois and Southwest Missouri. During the 1975 campaign, Paducah employees pledged more than $57,000.

AIChE to sponsor program on energy conservation

"Energy Conservation and Alternate Sources" is the topic of the annual fall symposium sponsored by the Knoxville-Oak Ridge Section of the American Institute of Chemical Engineers. Sessions will be held from 7 until 10 p.m. on September 20, 21, and 22 in the Oak Ridge Public Library Social Room.

Twelve speakers will discuss topics including conservation, solar heating/cooling, solar electricity generation, geothermal energy and wind energy. Ernest G. Silver of the Institute for Energy Analysis, Oak Ridge Associated Universities, will keynote the symposium with a speech on "Exotic Energy Sources — Why Bother?"

Admission will be $3 per person for the three-night series, or $1.50 for any single night.

wanted

ORNL

RIDERS for commuter van pool from Beaver Creek-Karns area, Knoxville, to any portal, 8-4:30 shift. Jim Womac, plant phone 3-6678, home phone 947-9707.

CAR POOL MEMBER, West Outer Drive-Pennsylvania-Hillside area, Oak Ridge, 8:15-5:00. Call Tom Burnett, plant phone 3-6939, home phone 483-1975; or Dick Strehlow, plant phone 3-1175, home phone 482-3240.

ORGDP

RIDE from South, North or West Knoxville to any portal, D shift. Robert Johnson, plant phone 3-9291; home phone 577-6220.

Y-12 Company Store sets longer inventory closings

Beginning September 30, Y-12's Company Store will close three days each month for stocking and inventory. The store will be closed on the last working day of the month (in this case, September 30) and the first two days of the new month (October 1 and 4).

Paducah tells major appointments

(Continued from page one)

In his new position, Merriman will have overall responsibility for plant engineering, laboratory, environmental control and quality assurance functions at the Paducah Gaseous Diffusion Plant.

A native of Maryville, Tenn. Merriman received his bachelor's degree in chemical engineering from Vanderbilt University and his M.S. and Ph.D. from the University of Tennessee.

He first joined Union Carbide Corporation as a summer student in the Oak Ridge National Laboratory's Chemical Technology Division. In 1963 he joined the staff of the Engineering Development Division at the Oak Ridge Gaseous Diffusion Plant where he was involved in a variety of chemical process development activities related to isotope separation, nuclear fuel reprocessing, nuclear waste disposal and special material production.

In 1973 he transferred to Paducah where he served as Superintendent of the Planning and Technical Support Division before being named to head Plant Engineering.

Merriman is married to the former Sandra Hughes. They live at Route 1, Mayfield-Metropolis Road, Paducah.

Taylor, a native of Union, Miss., was graduated from Mississippi State University where he majored in electrical engineering. He has also done graduate work at the University of Iowa.

He joined Union Carbide in 1946, working in the area of instrument development at the Oak Ridge Gaseous Diffusion plant. He was transferred to Paducah in 1951 where he initially headed an instrument training school. Since then he has been responsible for the instrument and electrical engineering departments, and head of project management.

Taylor is married to the former Mary Lou Wallace, of Lexington, Tenn. The Taylors, who have three children, live at 4030 Sunset, Paducah.

Bewley received his bachelor's and master's degree in metallurgical engineering from the University of Kentucky and a master's degree in business administration from Murray State University.

He has been associated with the Paducah Plant since 1967. In 1970 he was named a section head in the technology department with responsibility for materials technology. In 1973 he was appointed project engineer for the Cascade Improvement Program at Paducah.

Bewley and his wife, Marian, and their two daughters live at Lutes Road, Paducah.

Pilot Plant to test 'ANFLOW'

(Continued from page one)

vironmental Protection Agency standards for secondary waste treatment.

ANFLOW differs both in configuration and operation from conventional industrial fermentation and waste treatment processes. Most industrial fermentations are performed on a batch basis in stirred tanks. Conventional activated-sludge liquid-waste treatment is performed on a continuous basis, but is aerobic (requires oxygen) in nature.

As a continuous process, ANFLOW may permit the use of smaller fermentation vessels. Since air is not required during processing, the microorganisms grow and die at a much slower rate, thereby producing a potentially smaller amount of waste sludge than both the industrial fermentation and activated-sludge processes. It also has been demonstrated that an ANFLOW unit can efficiently treat wastes at temperatures between 60 and 75 degrees F., whereas conventional systems require temperatures above 85 degrees for treatment.

Pilot plant to test gas

Experiments with the system have shown that a gas containing methane can be recovered during treatment of domestic sewage. Tests of the quality and quantity of the gas produced by the ANFLOW process will be a major goal of the pilot plant project.

The process also shows promise for treating several different types of industrial wastes in addition to domestic sewage, including those from starch processing, food processing, paper production, and coal processing. A longer term objective will be to demonstrate techniques for recovery of usable organic chemical products from these wastes using ANFLOW.

Operation of the Oak Ridge pilot plant will provide for evaluation of the effectiveness of the ANFLOW process in treating domestic and industrial wastes and for continuation of the necessary supporting research to achieve full potential of the process.

The cooperative venture is designed to aid in the transfer of this ERDA-developed technology to the private sector and to facilitate future commercialization of the ANFLOW process.

nuclear division news

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